

DOCKET NO: 290310US41X PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :  
NIAZ IREKOVICH AKISHEV, ET AL. : EXAMINER: WATKINS, WILLIAM P.  
SERIAL NO: 10/582,228 :  
FILED: JUNE 9, 2006 : GROUP ART UNIT: 1794  
FOR: SANDWICH PANEL CORE :

APPEAL BRIEF WITH APPENDICES

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

This is an appeal from a final Office Action dated June 2, 2009. A Notice of Appeal was timely filed on November 2, 2009.

I. REAL PARTY IN INTEREST

The real parties in interest in this appeal is 1) AIRBUS, having an address at 1, Rond Point Maurice Bellonte, F-31707 Blagnac Cedex, 31700 FRANCE, and 2) OTKRYTOE AKTSIONERNOE OBSHESTVO "KAZANSKY NAUCHNO-ISLEDOVATELSKY INSTITUT AVIATIONNOI TEKHNologii", having an address at ul. Dementieva, 2v, Kazan, 420036 RUSSIAN FEDERATION. AIRBUS and OTKRYTOE AKTSIONERNOE OBSHESTVO "KAZANSKY NAUCHNO-ISLEDOVATELSKY INSTITUT AVIATIONNOI TEKHNologii" are the real parties in interest by way of assignment filed on December 29, 2009 in the U.S. Patent and Trademark Office.

## II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representative and the assignees are aware of no appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## III. STATUS OF THE CLAIMS

Claims 1-5 are pending. Claims 1-5 stand rejected, and the rejection of Claims 1-5 is herein appealed.

## IV. STATUS OF THE AMENDMENTS

In a Final Office Action dated June 2, 2009 (hereinafter "Final Action"), the Examiner finally rejected Claims 1-5. An Amendment after Final Action under 37 C.F.R. § 1.116 was filed on October 1, 2009, in which Claim 1 was amended. In an Advisory Action dated October 14, 2009, the Examiner indicated that the Amendment after Final dated October 1, 2009 is to be entered for purposes of Appeal. The attached Claims Appendix (section VIII) reflects Claims 1-5 as presently pending on appeal.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER<sup>1</sup>

The claimed invention, as recited in independent Claim 1, is directed to a sandwich panel core that includes a sheet of polymeric paper with a binder applied to both sides of the sheet. Examples of the claimed core are shown in Figures 1 and 2, for example. The binder layers bond in-between at locations of the holes 3 thereby forming a 3-D structure working as a single whole in the core structure.<sup>2</sup>

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<sup>1</sup> It is Appellants' understanding that, under the rules of Practice before the Board of Patent Appeals and Interference, 37 C.F.R. § 41.37(c) requires that a concise explanation of the subject matter recited in each independent claim be provided with reference to the specification by page and line numbers and to the drawings by reference characters. However, Appellant's compliance with such requirements anywhere in this document should in no way be interpreted as limiting the scope of the invention recited in all pending claims, but simply as non-limiting examples thereof.

<sup>2</sup> See Appellants' specification as originally filed at page 3, lines 26-27 with reference to Figure 1, for example.

VI. GROUNDS FOR REJECTION TO BE REVIEWED ON APPEAL

Whether Claims 1-5 are unpatentable under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,815,022 to Renck et al. (hereinafter “Renck”) in view of U.S. Patent No. 3,767,498 to Sharp et al. (hereinafter “Sharp”); and whether Claims 1-5 are unpatentable on the ground of non-statutory obviousness-type double patenting over Claim 1 of co-pending U.S. Application No. 10/582,784 in view of Renck.

## VII. ARGUMENT

### A. THE REJECTION OF CLAIMS 1-5 UNDER 35 U.S.C. § 103(a) AS UNPATENTABLE OVER RENCK IN VIEW OF SHARP.

#### 1. Claims 1, 2, and 5

The rejection of Claim 1 is improper because the record provides no apparent reason to combine the cited references. The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966). *See also KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734, 82 USPQ2d 1385, 1391 (2007). In this case, the differences between the claimed subject matter *as a whole* and the prior art *as a whole* support a conclusion that the present invention is nonobvious because there is no apparent reason to combine the cited references.

Claim 1 recites a sandwich panel core, wherein the core is a 3-D structure formed from a sheet of polymeric paper, a binder layer is applied onto both sides of the sheet, the sheet includes perforation holes, and the binder layers bond to each other at a location of the perforation holes.

The Final Action rejected Claim 1 based on the combined teachings of Renck and Sharp. Renck describes a 2-D “multi-layer laminated structure...reinforced by adhesive bridges that extend through openings in the layer and tie together the layers on either side of the reinforced layer”<sup>3</sup> (emphasis added). The sheet material layers can be formed of any suitable material, and can be rigid or flexible.<sup>4</sup> Renck specifically discusses the use of paperboard as the material of the layers. The Advisory Action on page 2 asserts with respect to Renck that “[t]he at least three layer structure of two sheets in the outer layer and a central

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<sup>3</sup> See Renck, in the Abstract.

<sup>4</sup> See Renck, at col. 3, lines 17-20

core layer with perforations and adhesive on both sides of the core sheet and through the perforations is clearly a panel like structure with the core being sandwiched between two outer layers.”

Appellants respectfully disagree with the assertion made on page 2 of the Advisory Action that the multi-layer structure and adhesive bridges of Renck disclose the claimed sheet and binder layers on both sides of the sheet. Appellants recognized several problems with conventional sandwich panel cores. In particular, page 1, lines 24-27 of Appellants’ specification describes shortcomings of conventional sandwich panel cores due to increased weight. Renck is directed to a laminated structure exhibiting an increased weight due to its multi-layer structure. In contrast, Appellants recognized that a lightweight sandwich panel core results in an increase in aircraft efficiency.<sup>5</sup>

Additionally, the Examiner erred with respect to the assertion that the “adhesive on both sides of the core sheet” of Renck discloses the claimed binder layers. Page 1, lines 24-25 of Appellants’ specification states that “polymeric paper has a relatively low adhesion to phenolic binders.” Holes are thus formed in the claimed polymeric paper to bind the polymeric binder layers to each other. In contrast, Fig. 2 of Renck shows a cross-section of body wall 12, which includes paperboard plies 14, 16, and 18. Adhesive 20 is applied in between the opposing faces of the neighboring plies to adhere the plies to the adhesive 20.

Further, Renck does not disclose or suggest use of polymeric paper. The Advisory Action on page 2 states that “Sharp clearly teaches paper and polymer paper as alternatives in a core structure which implies similar function.” Moreover, the Final Action asserts based on Sharp that “paper and polymer papers have a similar ability to function as core materials in

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<sup>5</sup> See Appellants’ original specification, at page 2, lines 3-8.

sandwich panels.”<sup>6</sup> Appellants respectfully disagree with the Examiner’s interpretation of Sharp.

Sharp relates to insulation panels for use in providing a gas insulation layer between a surface and a liquid having a low boiling temperature.<sup>7</sup> However, Sharp merely states that “the panel assembly 10 comprises a cellular or honeycomb core 12 which may be fabricated from a wide variety of flexible materials having low thermal conductivity”<sup>8</sup> (emphasis added). Sharp then lists two examples of papers that may be used, Kraft paper or Nomex.

The record, however, fails to provide the required evidence of a reason or motivation for a person of ordinary skill in the art to perform a modification of the Nomex paper of Sharp with the multi-layer paperboard structure of Renck. While Sharp may provide a reason for selecting Nomex paper, Sharp fails to explain why a person of ordinary skill in the art would find it obvious to incorporate such a material in a multi-layer paperboard structure such as the one disclosed in Renck. Sharp does not provide any evidence that Nomex paper would work in the structure of Renck.

In addition, Renck is not concerned with providing materials “having low thermal conductivity,” as stated in Sharp.<sup>9</sup> Instead, Renck is concerned with obtaining paperboard tubes having high strength an ability to bond to the adhesive used for joining the layers together.<sup>10</sup> Renck states that its sheet material layers can be formed of any suitable material, and can be rigid in some cases while in other cases they may be flexible.<sup>11</sup> Renck does not provide any evidence that further improvement is desired, nor that the material in its multi-layer paperboard structure has “similar function” to the material in the insulation panel assembly of Sharp, as asserted in the Advisory Action on page 2.

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<sup>6</sup> See the Final Action at page 3, lines 4-5.

<sup>7</sup> See Sharp, in the Abstract.

<sup>8</sup> See Sharp, at col. 3, lines 40-44.

<sup>9</sup> See Sharp, at col. 3, lines 40-45

<sup>10</sup> See Renck, at col. 4, lines 7-23.

<sup>11</sup> See Renck, at col. 3, lines 17-20.

Renck and Sharp, therefore, do not provide any apparent reason to perform the modification of the multi-layer paperboard structure of Renck. In other words, an attempt to bring in the isolated teaching of Sharp's use of Nomex paper in an insulation panel in the multi-layer paperboard structure of Renck would amount to improperly picking and choosing features from different references without regard to the teachings of the references as a whole.

Accordingly, the Final Action's rejection of Claim 1 is improper because the combined teachings of Renck and Sharp fail to disclose or suggest all of the features recited in Claim 1. It is respectfully requested the rejection of Claim 1 be reversed.

Although dependent Claims 2 and 5 recite additional features which are patentable, particularly in combination with the features of the claims from which they depend, to simplify issues on appeal, Appellants do not separately argue patentability of the remaining claims of this group. These claims are patentable at least by virtue of their dependence upon Claim 1.

## 2. Claim 3

Claim 3 depends from Claim 1 and further recites that the top binder layer has an inner surface bonded to the paper, and an outer unbonded surface. The Final Action and the Advisory Action do not specifically address the rejection of Claim 3.

Fig. 2 of Renck shows a cross-section of body wall 12, which includes paperboard plies 14, 16, and 18. Adhesive 20 is applied in between the opposing faces of the neighboring plies to adhere the plies to the adhesive 20. Assuming the middle ply 16 corresponds to the claimed sheet, then Fig. 2 of Renck shows inner and outer surfaces of both adhesive layers 20 bonded to a ply. If assuming that the entire body wall 12 is the claimed sheet, then Renck would not disclose the claimed binder layers applied to both sides of the sheet, as recited in Claim 1. Thus, Renck does not disclose or suggest "the top binder layer



has an inner surface bonded to the paper, and **an outer unbonded surface**,” as recited in Claim 3. Accordingly, it is respectfully requested the rejection of Claim 3 be reversed.

3. Claim 4

Claim 4 depends from Claim 1 and further recites that the bottom binder layer has an inner surface bonded to the paper, and an outer unbonded surface. The Final Action and the Advisory Action do not specifically address the rejection of Claim 4.

Fig. 2 of Renck shows a cross-section of body wall 12, which includes paperboard plies 14, 16, and 18. Adhesive 20 is applied in between the opposing faces of the neighboring plies to adhere the plies together. As discussed above with respect to Claim 3, assuming the middle ply 16 corresponds to the claimed sheet, then Fig. 2 of Renck shows inner and outer surfaces of both adhesive layers 20 bonded to a ply. If assuming that the entire body wall 12 is the claimed sheet, then Renck would not disclose the claimed binder layers applied to both sides of the sheet, as recited in Claim 1. Thus, Renck does not disclose or suggest “the bottom binder layer has an inner surface bonded to the paper, and **an outer unbonded surface**,” as recited in Claim 4. Accordingly, it is respectfully requested the rejection of Claim 4 be reversed.

**B. THE DOUBLE-PATENTING REJECTION OF CLAIMS 1-5 OVER CLAIM 1 OF CO-PENDING U.S. APPLICATION NO. 10/582,784 IN VIEW OF RENCK.**

The rejection of Claims 1-5 is improper because Claim 1 of the present application discuss binder layers bonding to each other. In contrast, the sandwich panel core described in Claim 1 of U.S. Application No. 10/582,784 is made with perforations along zigzag bending lines (“crimps”) to bond the core and the skin along the zigzag lines. The purpose of the perforations of U.S. Application No. 10/582,784 is to provide a location for placement of composite adhesive material for the core-skin bonding.

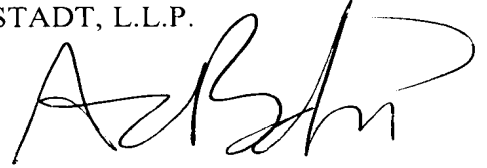
Accordingly, the double patenting rejection of Claims 1-5 is improper because Claim 1 of U.S. Application No. 10/582,784 fails to disclose or suggest all of the features recited in Claims 1-5. It is respectfully requested the double patenting rejection of Claims 1-5 be reversed.

C. CONCLUSION

In view of the above remarks, Appellants respectfully request the rejections of the  
Final Action dated June 2, 2009 be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, L.L.P.



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Philippe J.C. Signore, Ph.D.  
Attorney of Record  
Registration No. 43,922

Customer Number

**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 07/09)

Adnan H. Bohri  
Registration No. 62,648

VIII. CLAIMS APPENDIX

Claim 1 (Rejected): A sandwich panel core, wherein  
the core is a 3-D structure formed from a sheet of polymeric paper,  
a binder layer is applied onto both sides of the sheet,  
the sheet includes perforation holes, and  
the binder layers bond to each other at a location of the perforation holes.

Claim 2 (Rejected): The sandwich panel core according to Claim 1, wherein the  
binder layers are made of phenol-formaldehyde resin.

Claim 3 (Rejected): The sandwich panel core according to Claim 1, wherein the top  
binder layer has an inner surface bonded to the paper, and an outer unbonded surface.

Claim 4 (Rejected): The sandwich panel core according to Claim 1, wherein the  
bottom binder layer has an inner surface bonded to the paper, and an outer unbonded surface.

Claim 5 (Rejected): The sandwich panel core according to Claim 1, formed by a  
process comprising:

applying binder layers to the top and bottom of the paper in a liquid state;  
bonding the binder layers to each other at locations of the perforation holes; and  
thermally hardening the binder layers.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.